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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,981	05/02/2001	Jason Seung-Min Kim	2100653-991340	5778

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EXAMINER	
SCHNEIDER, JOSHUA D	

ART UNIT	PAPER NUMBER
2182	

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/847,981	KIM, JASON SEUNG-MIN	
	Examiner	Art Unit	
	Joshua D Schneider	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/14/2004 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection. It is seen that the reference applied in the previous rejection is not extremely clear where the software based DMA operations are taking place. It should however be noted that by definition they are not done in the host processor. The purpose of any DMA co-processor is to offload the transfer functions of DMA operations from the system processors. The reference does teach that software DMA was well known at the time of invention. It is also well known that anything done in software can be done in hardware and vice versa. The new rejection will make clear that the movement from software to hardware and vice versa is common in design and has many motivations.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "software direct memory access" in claims 1-5 is used by the claim to mean "software based direct data transfer by a processor", while the accepted meaning is "software based direct data transfer without the use of the processor." The term is indefinite because the specification does not clearly redefine the term. A DMA transfer by definition a transfer that does not involve the processor. The purpose of these types of transfers is to offload the task of transferring data from the processor(s).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,884,027 to Garbus et al. in further view of "Structured Computer Organization" by Tanenbaum.

7. With regards to claim 1, Garbus teaches a first processor (Figs. 2, element 25), a second processor (Figs. 2, element 31), and a DMA engine in the second processor capable of executing the transfer of data between system resources (column 2, lines 9-33). Garbus does not explicitly

teach the DMA engine is a software engine. In fact Garbus refers to the use of hardware, including DMA registers and a DMA controller in the P2P processor. However, it is well known that not all devices are hardware DMA compatible, and must be accessed using software DMA. Tanenbaum also teaches that hardware and software are logically interchangeable (page 11, third paragraph). It would have been obvious to one of ordinary skill in the art at the time of invention to replace the hardware DMA controller with a software DMA engine in order to eliminate the cost and space needed to implement hardware DMA.

8. With regards to claims 5 and 6, Garbus teaches the loading of multiple data packets from a device and storing these multiple data packets into the system memory at the specified locations (scatter/gather data chaining, column 42, line 44, through column 43, line 33).

9. With regards to claims 2 and 9, Garbus teaches the processing of data (scatter/gather and unaligned data transfer, column 42, line 44, through column 43, line 33).

10. With regards to claims 3 and 7, Garbus teaches RAM memories (column 3, lines 29-45) and hardware buffers for interfacing with devices (column 42, line 44, through column 43, line 33).

11. With regards to claims 4 and 8, Garbus teaches DMA through the use of hardware buffers for interfacing with devices (column 42, line 44, through column 43, line 33).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,963,976 to Ogawa et al. teaches a software DMA engine for executing the transfer of data between system resources (column 6, lines 24-29). U.S. Patent 6,823,472 to

DeKoning et al. teaches the sharing among a plurality of processors the use software resources including DMA scatter gather list elements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua D Schneider whose telephone number is (571) 272-4158. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A Gaffin can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JDS

JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
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